

# B.S. in Chemical Engineering

2014-2015 Academic Year

Five-year Academic Plan for students starting in MA 1032

Applied Chemistry Option

**MichiganTech**

Michigan Technological University  
Department of Chemical Engineering

This suggested schedule provides an option for students wishing to emphasize inorganic chemistry. Instead of taking organic II lecture, students take CM 4740 Hydro/Pyrometallurgy in their junior year.

## Freshman Year

### Fall Semester

Course	Title	Cr
CH 1150	University Chemistry I	3
CH 1151	University Chemistry I Lab	1
CH 1153	University Chemistry I Rec	1
CM 1000	Introduction to Chemical Engg	1
ENG 1001	Engineering Problem Solving	2
MA 1032	Data, Functions, & Graphs Plus	4
UN 1015	Compositions	3
	Co-Curricular (1 cr)*	
	<b>Total</b>	<b>16</b>

### Spring Semester

Course	Title	Cr
CH 1160	University Chemistry II	3
CH 1161	University Chemistry II Lab	1
CH 1163	University Chemistry II Rec++	1
ENG 1100	Engineering Analysis	2
MA 1161	Calculus with Technology I	5
UN 1025	Global Issues**	3
	Co-Curricular (1 cr)*	
	<b>Total</b>	<b>16</b>

++Note: CH 1163 is recommended but not required.

## Sophomore Year

### Fall Semester

Course	Title	Cr
CH 2410	Organic Chemistry I	3
CH 2411	Organic Chemistry Lab I	1
ENG 1102	Eng Modeling and Design	3
MA 2160	Calculus with Technology II	4
PH 1100	Physics by Inquiry I	1
	HUFA Elective*	3
	Co-Curricular (1 cr)*	
	<b>Total</b>	<b>16</b>

### Spring Semester

Course	Title	Cr
MA 3160	Multivariable Calc with Techn	4
PH 2100	University Physics I	3
	SBS Elective*	3
	HASS Course*	3
	<b>Total</b>	<b>13</b>

## Junior Year

### Fall Semester

Course	Title	Cr
CM 2110	Fundamentals of ChE I	3
CM 3410	Tech Comm for ChE	3
MA 2320	Elementary Linear Algebra	2
or	or	
MA 2330	Introduction to Linear Algebra	3
PH 1200	Physics by Inquiry II	1
PH 2200	University Physics II	3
	<b>Total</b>	<b>12-13</b>

### Spring Semester

Course	Title	Cr
CH 3510	Physical Chemistry I	3
CH 3511	Physical Chemistry Lab I	2
CM 2120	Fundamentals of ChE II	3
MA 3520	Elem Differential Equations	2
or	or	
MA 3560	Math Modeling with Diff Eq	3
	HASS Course*	3
	<b>Total</b>	<b>13-14</b>

## Senior Year

### Fall Semester

Course	Title	Cr
CM 3110	Transport/Unit Operations I	3
CM 3215	Fundamentals of ChE Lab	2
CM 3230	Thermodynamics for ChE	4
	ChE Elective*	3
	HASS Course*	3
	<b>Total</b>	<b>15</b>

### Spring Semester

Course	Title	Cr
CM 3120	Transport/Unit Operations II	3
CM 3310	Process Control	3
CM 3510	Chemical Reaction Eng	3
CM 4740	Hydro/Pyrometallurgy*	4
	<b>Total</b>	<b>13</b>

## Senior Year 2

### Fall Semester

Course	Title	Cr
CM 4110	Unit Operations Lab	3
CM 4310	Process Safety/Environment	3
CM 4855	ChE Proc Anal & Design I	3
	Technical Elective*	3
	<b>Total</b>	<b>12</b>

### Spring Semester

Course	Title	Cr
CM 4120	Chemical Plant Operations Lab	3
CM 4860	ChE Proc Anal & Design II	2
CM 4861	ChE Design Lab II	1
	Technical Elective*	3
	HASS Course*	3
	<b>Total</b>	<b>12</b>

\* See back for description.

\*\* A 3000-level or higher modern language course may be used in place of UN 1025, Global Issues.

*This is not an official list of degree requirements. Adjustments may be required due to curriculum changes.*

Updated 5/1/2014

# Elective Worksheet

## Applied Chemistry Option (13 credits total)

- 1) **Hydro/pyrometallurgy Lecture**  
CM 4740 \_\_\_\_\_ 4 cr
  - 2) **ChE Elective** (2-4 cr)  
\_\_\_\_\_
  - 3) **Additional Technical Electives** (5-7 cr)  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- Total = 13 cr**

- The additional technical electives can come from the ChE, Engineering, and/or Math, Science, and Applied Business (MSAB) lists that are on the Technical Elective handout.
- A maximum of 4 credits can be from the MSAB list.

The Technical Elective handout is available on the department webpage: <http://www.mtu.edu/chemical/>

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## General Education Requirements (24 credits total)

- 1) **Required Gen Ed Core Courses** (12 cr)  
UN 1015 \_\_\_\_\_ 3 cr  
UN 1025 or 3000+ level language course  
\_\_\_\_\_ 3 cr  
HUFA Elective \_\_\_\_\_ 3 cr  
SBS Elective \_\_\_\_\_ 3 cr
- 2) **HASS Courses** (12 cr)  
\_\_\_\_\_ 3 cr  
\_\_\_\_\_ 3 cr  
(3000+ lev) \_\_\_\_\_ 3 cr  
(3000+ lev) \_\_\_\_\_ 3 cr

- 6 credits of HASS must be at the 3000+ level
- optional - 3 cr MAX from HASS Creative Endeavors
- optional - 3 cr MAX from HASS Supplemental

**Recommended HASS course:** EC 3400 Economic Decision Analysis, prior or during fall senior year classes.

### Humanities and Fine Arts (HUFA) Electives:

- FA 2330 Art Appreciation
- FA 2520 Music Appreciation
- FA 2820 Theater Appreciation
- HU 2130 Introduction to Rhetoric
- HU 2501 American Experience in Literature
- HU 2538 British Experience in Literature
- HU 2700 Introduction to Philosophy
- HU 2820 Communication and Culture
- HU 2910 Language and Mind

### Social and Behavioral Science (SBS) Electives:

- EC 2001 Principles of Economics
- PSY 2000 Principles of Psychology
- SS 2100 World Peoples and Environments
- SS 2200 Prehistory and Archaeology
- SS 2400 Introduction to Human Geography
- SS 2500 United States History to 1871
- SS 2501 United States History Since 1877
- SS 2502 European History to 1650
- SS 2503 European History Since 1650
- SS 2504 World History to 1500
- SS 2505 World History Since 1500
- SS 2600 American Government and Politics
- SS 2700 Introduction to Sociology

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## Co-Curricular Course Requirement (3 credits total)

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\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
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Co-curricular courses count for financial aid and full-time student status; however they are not included in GPA calculations or in the 131 credits total required for graduation.

Co-curricular courses may only be used once for this requirement, except PE 0210 which may be used twice.

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## Free Elective Requirement (3 credits total)

MA 1032 \_\_\_\_\_ 4 cr

Free electives are any class, 1000-level or higher that are not co-curricular courses. They may be taken pass/fail, unless the course is being used for a minor.

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## OPTIONAL - Minor (6 credits not double counting)

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Each minor must include at least 6 credits of 3000-level or higher courses that are not counting elsewhere for your degree (required courses, technical electives, HASS courses, etc.), EXCEPT these credits can count toward your free elective requirement.